

great many remained on the lower parts of the plant, and in the early stages *coridon* larvae and the fly are of the same size and colour and so can easily be destroyed together.

This disinfection had to be carried out at least once a week and to add to my difficulties the plants began to wilt and die, no doubt as the direct result of the fly sucking their vital juices. To cut a sad story short, I was eventually left with two fairly healthy pots of food plant and 36 full fed larvae. I put a layer of peat on top of each pot to assist pupation but I made the mistake of letting it get damp when I watered the plants and as a result 19 pupae went mouldy and died. From the 17 survivors there emerged 9 males, 5 females and 3 ab. *syngrapha*—about what could be expected from a normal recessive in the F₂ generation.

It was some consolation that I had realised my ambition and incidentally learnt a lot in the process, but I should be most grateful if somebody could tell me how to control greenfly under these conditions.

Zygaena (Mesembrynus) diaphana Staudinger and *Zygaena (Agrumenia) carniolica* Scopoli in Georgia (Transcaucasia)

By HUGO REISS, Stuttgart

Zygaena diaphana ingens Burgeff (comb. nov.)

Professor H. Burgeff (1926: 14) described *ingens* as a subspecies of *Zygaena purpuralis* Brünnich as follows: "Gigantic specimens from Tiflis the bulk even 3-4 times larger than *purpuralis*, forewing length 17-18 mm. (instead of 15-15.5 mm.), width behind the apex of the forewing ca 7 mm. (instead of 6 mm.). Antennae dainty, hardly larger than in the nominate form. Red spots narrow, 1, (3, 5, 6), (2, 4), separated by the chief veins. Middle spot terminated abruptly, of which spot 6 projects and is strongly developed. Apex of hindwings narrowly edged with black. Red a pale carmine, almost carmine-rose, which on the forewings is somewhat lighter than on the hindwings. Black ground colour of forewings almost without gloss. Legs even in the ♀, black (8♂, 8♀ from the neighbourhood of Tiflis via Bang-Haas)."

A male from the coll. Burgeff is illustrated in colour (Reiss, 1930: 8, pl. 1g).

Holik & Sheljuzhko (1953: 176) wrote on the distribution of *ingens* Burgeff: "The ssp. *ingens* Burgeff is not restricted to the neighbourhood of Tiflis, as is shown by the material before us, which agrees perfectly with Burgeff's description. Further authentic localities are: Borzhom, 2♂, 1♀, 5-6.vii.1910, leg. Xienzopolski, 1♂, coll. Staudinger, Berlin, leg. Christoph, 28.vi.1880; Berg Bolshoje Pozharistshe, near Borzhom, 3♂, 2♀, 17-26.vii.1915, leg. Kotshubei, 2♂, 2♀, 13-15.viii.1932, 1♀, 28.vii.1937, leg. Tkatschukov; Mitarba, near Bakuriani, 4♂, 1♀, 21.vii.1932, leg. Tkatschukov; Abas-tuman, 6♂, 4♀, 23-29.vii.1914, leg. Sheljuzhko, 1♂, leg. Haberhauer, 1882, in coll. Staudinger; slopes of the Zekar-Pass, near Abas-tuman, 1,800 m., 4♂, 1♀, 28.vii.1914, leg. Sheljuzhko, 8♂, 3♀, 12.vii.1917, leg. Kotshubei".

A study of the genitalia of a male and female by W. Gerald Tremewan, Woodham, Weybridge (personal communication) and a male by Fr. Heller,

Stuttgart, on fresh specimens collected at Tiflis, 28.v-9.vi.1964, by Prof. Otto Slaby, Plzn, showed that *ingens* Burgeff is conspecific with *diaphana* Staudinger and is not a subspecies of *purpuralis* Brünnich. According to Prof. Burgeff (personal communication), the type specimens of *ingens* in coll. Burgeff were dissected by Dr. B. Alberti and an examination of the genitalia confirms that the subspecies is referable to *diaphana* Staudinger.

Zygaena carniolica achalzichensis Reiss ab. **iberica** Kolenati (stat. nov.)

Holik & Sheljuzhko (1956: 209) reported on *carniolica* in Georgia as follows: "Kolenati (1846: 94) recorded the occurrence of *Zyg. onobrychis* Fabr. in the Caucasus. In the same place he described and named a var. *iberica* Kol.:

Var. 99. Iberica Kolenati. Viridi-caerulea, macula alarum anteriorum apicali lineari, arcuata, coccinea, nunquam albo-cincta. Habitat in Iberia. Note 1. Iberia is listed as a province in the upper Kyros (=Kura) and corresponds with to-day's Georgia (Tiflis, Kutais). Thus was given the first description of a Transcaucasian form of *carniolica*, and it is peculiar, that later authors carelessly omitted to comment on this form of *carniolica* flying in Georgia. Lederer (1870: 29) wrote: I do not know the variety *iberica* Kol.—pp."

Holik & Sheljuzhko (1956: 209) placed *iberica* Kolenati as the main Georgian form of *Zygaena carniolica* Scop. and placed *alta* Reiss (1921) and *achalzichensis* Reiss (1935) as synonyms.

In Kolenati's time, the term "var" was also used for aberrations. According to the description, *iberica* is a form in which the white edging of the forewing spots is missing (nunquam albo-cincta). I have no examples of this form from Georgia in my collection and neither have I seen one in other collections. Even Holik & Sheljuzhko (1956: 210) noted no specimen of *carniolica* from Georgia, without white edging on the forewing spots, in the large amount of material that they examined. They noted only one specimen of *carniolica* in Staudinger's collection, with the determination label "var. *iberica* Kol." and the inadequate locality "Kaukasus". In this specimen only the forewing spots 1, 2, 3 and 4 are finely edged with white. It does not agree with Kolenati's description and is merely transitional to *iberica*, while the locality label "Kaukasus" does not prove that the specimen came from Georgia. With regard to *carniolica alta* Reiss I refer readers to a previous paper (Reiss, 1941: 62).

It follows that *iberica* Kolenati can only be placed as an aberration of ssp. *achalzichensis* Reiss. The name *arragonica* Holik & Sheljuzhko (1956: 210), note 1), proposed to replace *occitanica iberica* Staudinger, which they considered to be preoccupied by *iberica* Kolenati, is unnecessary and now falls as a synonym of *iberica* Staudinger (**syn. nov.**).

REFERENCES

- Burgeff, H. 1926. Kommentar zum palaearktischen Teil der Gattung *Zygaena* Fab. des jetzt von E. Strand herausgegebenen Lepidopterorum Catalogus. *Mitt. münch. ent. Ges.*, **16**: 14.
- Holik, O. and Sheljuzhko, L. 1953. Über die Zygaenenfauna Osteuropas, Kleinasiens, Irans, Zentralasiens und Sibiriens. *Mitt. münch. ent. Ges.*, **43**: 176.
- Holik, O. and Sheljuzhko, L. 1956. *Ibidem*. *Mitt. münch. ent. Ges.*, **46**: 209-212.
- Kolenati, F. 1846. Meletemata entomologica, **5**: 94.
- Lederer, I. 1870. Contributions à la faune des Lépidoptères de la Transcaucasie. *Ann. Soc. ent. Belg.*, **13**: 29.

- Reiss, H., 1921. *Zygaena carniolica* Scop. Beschreibung neuer Rassen. *Int. ent. Z.*, **15** : 21.
- . 1930. In Seitz, Die Gross-Schmetterlinge der Erde, Supplement, **2** : 8, pl. 1g.
- . 1935. Neues über asiatische Zygaenen, im besonderen die Zygaenenfauna von Ak-Schehir in Kleinasien. *Int. ent. Z.*, **29** : 161.
- Reiss, H. 1941. Über einige neue europäische und asiatische Zygaenenrassen. (Lep.). *Z. wien. Ent. Ver.*, **26** : 62.

The Coleopterous Fauna of Stones at Staines, Middx.

By J. MUGGLETON, B.Sc.

This paper is an account of the Coleoptera (beetles) found under a group of stones at Staines, Middx. Although the species involved are commonplace, it is intended to show that in a locality where suitable habitats for beetles are rapidly decreasing (as a result of the requirement of land for building space), a single habitat in a small area can still support a number of species. Furthermore, I believe that this type of habitat may become of increasing importance in built-up regions. For as long as there are gardens, there will always be some stones around (e.g. rockeries, crazy paving, etc.) which will afford shelter to beetles. Additionally, the other fauna of these stones may provide a source of food for the predatory species.

This particular group of stones was chosen because their close proximity to each other and ease of access offers a good opportunity to study the habitat in this locality. The records presented below were made principally in 1962 and from 1965-1967. In some cases additional records from 1961, 1963 and 1968 have been included. As the term stones is rather ambiguous, included below is a detailed description of the habitat.

The Habitat

This is a group, now of twenty-one stones (twenty-four in 1965), lying in some waste-ground bordering a narrow gravel drive. It is 100 yards from the River Thames and is surrounded by houses and gardens. There is a small clump of trees on the west side. The altitude is about forty-six feet. The soil in this locality is an alluvial type and corresponds to the Brown Vega of Kubiëna (1953).

The area of ground covered by each stone ranges from 240 cm.² to 870 cm.². The average area covered being 576 cm.². All these stones occur within an area of 7 m.².

The surrounding vegetation consists of, *Urtica dioica* Linn. (Stinging Nettle), *Aegopodium podagraria* Linn. (Ground Elder), *Cirsium arvense* (Linn.) Scop. (Creeping Thistle), *Galium aparine* Linn. (Goosegrass) and the grasses *Dactylis glomerata* Linn. and *Lolium perenne* Linn. The nearby clump of trees contains, *Abies alba* Mill. (Silver Fir), *Acer negundo* Linn. (Box Elder), *A. pseudoplatanus* Linn. (Sycamore), *Ilex aquifolium* Linn. (Holly), *Sambucus nigra* Linn. (Elder) and a dead specimen of *Chamaecyparis lawsoniana* (A. Murr.) Parl. (Lawson's Cypress).

Both *Rana temporaria* Linn. (Common Frog) and *Bufo bufo* Linn. (Common Toad) occurred under the stones in 1962. Toads were still present in 1965, but absent in 1966 and 1967. One was found again in September 1968.